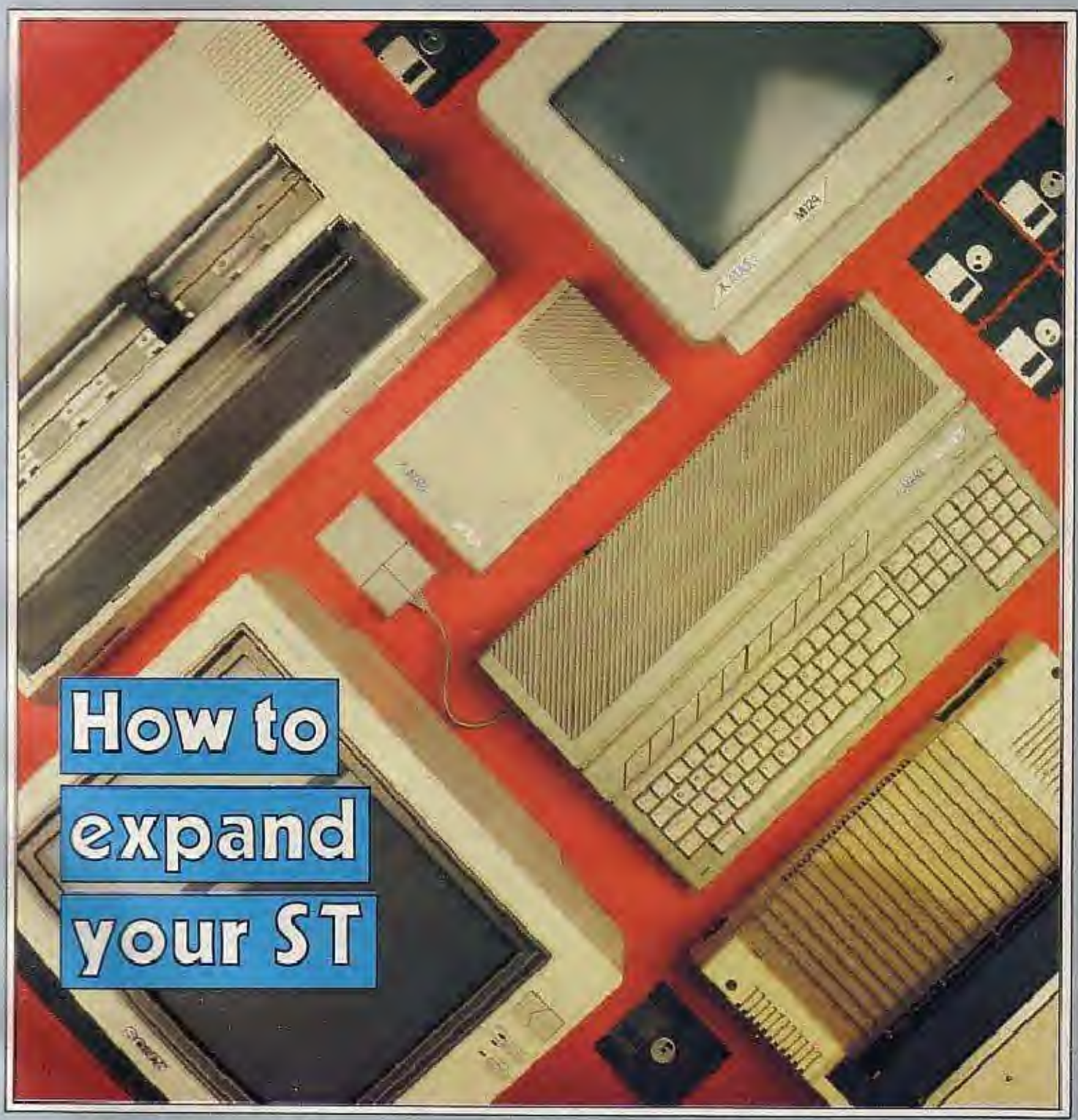
Vol. 1 No. 11 January 1987

Atari ST User



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Reviewed: K-Switch, Strip Poker, Winter Games
Revealed: The hidden secrets of ST discs and drives
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ST on track of a killer

A 1040ST may hold the key to the long term effects of extreme cold on the human body. It is being used to assess data from a unique experiment which medical men hope may lead to a better understanding of how to combat hypothermia in the elderly.

The machine – a gift from Atari UK – is even now still sifting the information from a year-long foray to the Antarctic.

In December 1983 the fifth Joint Services Expedition headed for Brabant Island, a place so wild and inhospitable that it has been visited by humans only three times since its discovery in 1898.

Led by Commander Chris Furse of the Royal Navy, the aim of the 12-strong party was to pass a complete year in the Antarctic with only tents for cover.

Although some 60 studies in all were carried out, it is the one involving hypothermia which may eventually prove to have the greatest significance.

The man in charge of this part of the expedition was Surgeon Lt. Commander Howard Oakley who, among other things, has an appreciation of the capabilities of computers in research.

"We didn't in fact take the ST along with us", he says, "but the role that it has played since then has been as vital as anything that went on before".

The naval surgeon, who served with the Marines during the Falklands, was responsible for observing the physiological changes which took place in the members of the party. "We were the first people ever to over-winter in Antarctica in tents", he says. "Before that it had been considered too dangerous.

"Anyway, it certainly meant we had people living in the most extreme conditions, so they were perfect subjects for our studies".

The researchers realised they would be breaking new ground. For while a mass of data has been accumulated concerning acclimatisation to heat, very little has been recorded about endurance to cold.

And cold it was. For though the actual temperature rarely fell to more than 20 degrees below zero, coupled with the wind chill factor this brought it down to a staggering 60 degrees below. Perfect conditions for frostbite.

The first noticeable effect of the cold was stomach upsets and increased urination. In fact, the latter sympton may in fact eventually help solve the problem of hypothermia.

For the memory of the ST now contains conclusive evidence that people dehydrate even more quickly at low temperatures than they do at high ones. This was mainly caused on Brabant Island by passing excessive amounts of urine – in most cases more than three litres in 24 hours.

So dehydrated did the men become during the height of the Antarctic winter that taking blood samples was compared to "trying to get raw liver into a syringe".

Such were the conditions that the men kept the same thermal underwear on for the whole year.

"I must admit we all smelled a little ripe by the time we finally left", admitted Lt. Commander Oakley. Yet because they wore suitable clothing, the members of the party generally remained healthy during the time.

One exception was one of the 12 who disappeared down a crevasse only to miraculously escape with just a broken leg. Major incidents like this were faithfully recorded alongside the minutiae which was regularly logged around the clock.

In fact the research threw up some 250,000 individual items of data. And this is where the 1040ST has taken over.

"It's so very easy to put all the information on a shelf when you get back and forget about it", says Howard Oakley, "and to be quite honest no one is that keen to help after the event".

But the Lt. Commander was determined that the information they had gained would be put to the maximum use – particularly in the field of hypothermia. So he began to search for a suitable computer to assist him with his huge task.

The expedition site on Brabant Island

At first he used an IBM PC XT, but eventually decided that this was tasked to its limits because of its architecture.

"With my work on skin temperatures I needed to manipulate very large matrices", he says, "and that means lots of memory, fast processing and graphics. The last quality was most important, as I needed to take photographs from the screen.

"To bring the XT up to that would have cost between £2,000 and £3,000".

So he began to look around at 68000 based machines. He almost immediately ruled out the Commodore Amiga on the grounds it has "lovely graphics but nothing else".

Next he ruled out the Macintosh because its strengths were not across the board. "In the end there was no other choice apart from the ST", he insists.

Among the software packages Howard Oakley has bought for his ST are Degas "for all my drawings" and Animator "the best program in the world with the worst manual".

But is the medical researcher expecting to make any major breakthroughs with the help of the ST?

"We never really look at it in those terms", he says. "All I believe we can hope for is a better understanding of hypothermia and how it affects people.

"But I can say that the ST is such a superb vehicle for research that if it was up to the machine alone, I'm sure we would find a way of controlling the killer".

Mike Cowley reporting

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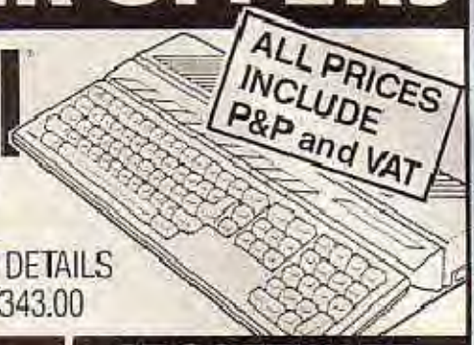

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K-SWITCH from Kuma gives you two STs for the price of one! It lets you split the memory of your ST into two equal parts, each of which operates like a normal individual ST. With a 1Mb ST this means that both programs think that they have a 520ST to themselves.

After initialising K-Switch, a simple press of Alternate and the two Shift keys swaps you from one half of memory to the other. For example, you can let K-Switch create two halves, load 1st Word and then while still in 1st Word, switch to the other half by pressing Alternate and the Shift keys.

After a couple of seconds a normal Gem desktop will appear. You can then load a spreadsheet such as VIP Professional to look up some figures. A quick press of Alternate and the two Shift keys and you're back in your 1st Word document at exactly the position that you left it, ready to type in the figures that you just looked up.

K-Switch also includes a built-in ram disc to make up for the fact that ordinary ram disc programs will not be compatible with it. Both halves of the K-Switched ST can use the ram disc which makes it especially useful for swapping files between programs. For example you could pass an Ascii text file from a word processor to a desktop publishing program.

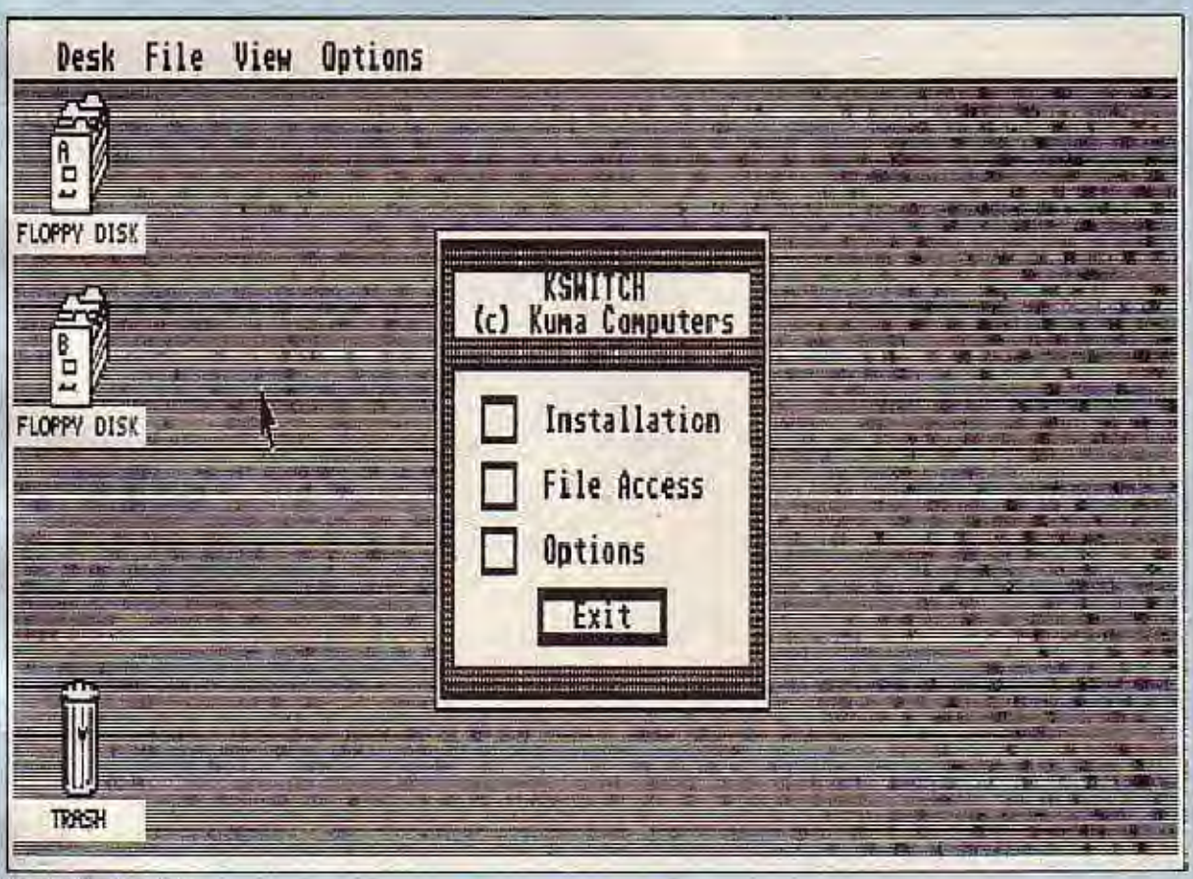
If your ST has only 512k of memory, then K-Switch may not work with some combinations of programs, since most programs require the full 512k of memory to run in and K-Switch will only give them 256k each. Mind you, this is more an argument for upgrading your memory than against K-Switch

Software which auto-boots – for example some games – will not work with K-Switch. Programs must be able to be run from the desktop to be K-Switch compatible.

However, a lot of games work with K-Switch and it is possible to have a game in one half of the ST and a serious program in the other. When the boss leaves the room, a quick press of three keys and you can start zapping mega-toads again!

To summarise, K-Switch does exactly what it is advertised as doing. You can have two programs memory resident and swap from one to the other with ease. What we, the ST community, will get out of it depends on our inventiveness.

That said, it's so versatile that I am sure we can all find unique applications for it. Recommended for all ST users. ■

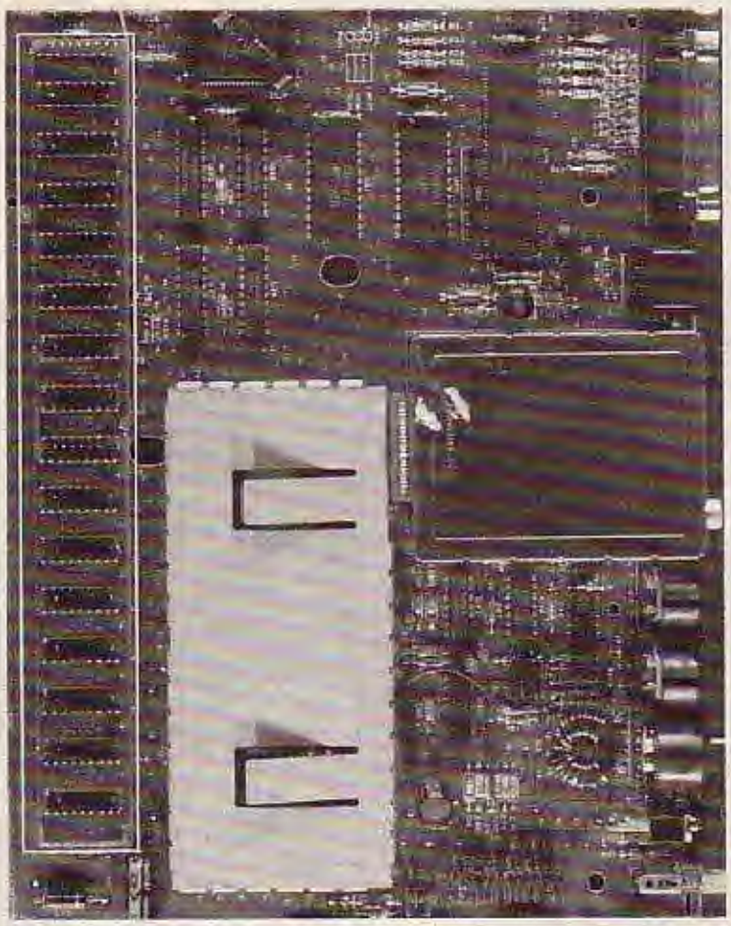


K-Switch in action

By Andrew Bennett

MEGAMAX C: Best for the ATARI ST

Reviewed in ATARI User, September 1986 by Peter Knowles and Roger Wier. "You get a complete development system — everything necessary to produce commercial quality software is provided ... Clearly, Megamax C compiles faster and produces much smaller files. These are great advantages, and may well prove to be the overriding consideration to many prospective buyers — together with its friendly front-end shell and complete manuals"



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Printers: Workhorse or thoroughbred?

ONE of the first major purchases that the new ST owner considers is a printer. When Atari designed the ST, it thoughtfully included a standard centronics parallel interface which caters for hundreds of readily available models.

The centronics standard interface defines how the signals are sent from the ST to the printer, both physically and electronically.

Of course, once the signals have arrived at the printer they need to be interpreted or decoded. Atari designed the ST's screen dump routines to work properly only with an Epson printer or any that decodes signals in the same way. Such printers are called Epson compatible and it's important that you buy one.

Here we look at two very different printers which, while at both ends of the price scale as far as printers go, are suitable for the ST, having a centronics interface and Epson compatibility.

Firstly there is Atari's own Epson compatible printer – the SMM804. It's the same colour and shape as the ST itself, but is about 3 inches high. It costs £199.95 and comes supplied with a centronics lead to connect it to the parallel interface of the ST.

The SMM804's dot matrix print head is made up of nine pins which move horizontally across the paper to form characters at speeds up to an average 80 characters per second. It achieves this speed by being bi-directional – it can print as it travels right to left as well as the normal left to right, thus making the most of the return journey.

It is also logic seeking, which means that the printer doesn't waste time printing spaces. It offers seven text styles – bold, italic, underline, super and subscript, pica and elite, plus 13 international character sets ranging from UK to Japanese Katakana.

The output is very dark due to the use of a carbon ribbon. Although these give initial good results, they fade more quickly than ordinary ribbons and are slightly more expensive to replace.

→

Product: Atari SMM804 Printer
Supplier: Atari, Railway Terrace, Slough, Berkshire.
Tel: 0753 33344.
Price: £199.95

Product: KISS Laser Printer
Supplier: Pragma, 93 New Street, Aylesbury, Bucks HP20 2NY.
Tel: 0296 434751.
Price: £2200

The Atari SMM804

Reviewed by Andrew Ralston

This is how they compare – SMM804 on the left, KISS on the right

AT the other end of the price and output-quality scale is the KISS laser printer. About the size of two Atari monitors placed side by side, the KISS laser printer offers superb quality output for around £2200.

In operation, the KISS is very much like a small photo copying machine with the part where you place the original removed. The ST passes text or graphics to the printer as normal and then a few seconds later the KISS feeds out a completed (warm) piece of paper. Replacement ink cartridges cost an expensive £80, but are good for up to 3000 copies.

A4 single sheets can be fed in either through a special hole at the back of the KISS or from a container at the front which can hold up to 100 sheets. This makes it difficult if not impossible to use normal computer printout paper.

If it wasn't for the KISS's built-in fan's purr, you would never know that it was switched on or printing – definitely the printer to have around at 3am when everyone else is asleep and you urgently need some hardcopy.

The KISS can emulate Diablo or Qume daisy-wheels and the Epson FX-80. There is a selection of some eight fonts to choose from and these can be changed using special switches on the front of the printer or by sending control codes from the ST. The KISS also offers all the styles of the SMM804.

Because the KISS does not have the graphics commands of Apple's laser writer for the Macintosh, it cannot produce the superb graphics associated with that device. It can only output graphics of the type that can be produced on an Epson printer.

However, the KISS uses some special in-built programs that scale any graphics up to its 300 dots per inch resolution, which has a markedly better appearance than the SMM804's 120 dots per inch output.

The KISS prints at the rate of 8 pages per minute, taking around the same amount of time to print a graphics dump as a dot matrix printer, but handling text at a far faster rate.

Certainly laser printers are the future as far as hardcopy goes and the price of the KISS is an indication of how cheap they will ultimately become. Laser printers are fast replacing daisy-wheel printers as the best way to achieve letter quality output with all computers – including the ST. Atari has long been rumoured to be working on a laser printer, but it is still a long way in the future.

If you can't afford a laser printer and can only sit and dream or you're just printing address labels, say, and don't need the quality, a good workhorse printer such as the SMM804 will go far and provide many a yard of printout without any fuss. ■

The KISS laser printer

Program: Winter Games
Price: £24.95
Supplier: US Gold, Units 2/3 Holford Way, Holford, Birmingham B6 7AX.
Tel: 021-356 3388

Work up a winter sweat

IT'S too cold to go out for exercise at this time of year, which is all the excuse you'll need to play this latest sports simulation.

Winter Games has seven events for you to work up a joystick-waggling sweat on: hot dog, speed skating, ski jump, figure skating, freestyle skating, bobsled and the biathlon.

The games kick off with an impressive opening ceremony. Music plays as a torch-bearing runner mounts a majestic podium to light the flame. White doves are released and they fly convincingly across the scene.

From 1 to 8 players can participate, each choosing to represent any of 18 different countries (the flags are shown and the anthems played).

Options allow you to compete in all,some or just one of the events; to practice a single event; to see the world records or to replay the opening ceremony. You can use the keyboard or, thankfully, one or two joysticks.

Strange name but *hot dog* is actually aerial acrobatics on skis. You zip down and off the end of a short ski run and try to pack in as many daring moves as possible before gravity wins and you smack down on compacted snow. Try to land feet first – meeting the ground lips first looks clever but will not impress the judges.

Speed skating has you belting along, in horizontal split screen fashion, against the computer or a fellow competitor. Fast and rhythmic joystick waggling is vital - brute force alone will move you about as fast as a snail on sedatives.

The *ski jump* is just that. A matchstick figure zooms down a massive slope and becomes airborne. Keeping an eye on the overlaid close-up in the right hand corner, you endeavour to adjust the jumper's balance to stop him going base over apex on landing.

Figure and *free skating* are very similar. Both show you as a lithe female skater gliding across a shimmering rink. By deft manipulation you can skate forwards, backwards, spin (sitting or on tiptoe) and execute such wonderful sounding movements as the double and triple lutz and axel jumps. Coming out of a triple axel facing the wrong way is not a pretty sight . . .

The *bobsled* event shows an overhead map of the track coupled with a small right-behind-the-sled view. You have to guide and bank the sled around the turns using the fastest line possible to succeed.

Finally the *biathlon*, the most strenuous of all the events. Wearing skis you run no less than four times around a multi-screen cross-country course. On each lap you must also stop, load, fire and hit five targets with a rifle. Those with weak wrists should give this one a miss.

Winter Games is a stunning visual feast. The fine-detailed mountain scenery is all beautifully depicted and the animation is slick and realistic. The events are great fun to play and there's plenty in the game to keep you entertained until summer comes around. ■

Sound	8
Graphics	9
Playability	9
Value for money	8
Overall	9

Reviewed by Bob Chappell

Riding the bobsled

Running cross-country in the biathlon

Program: Strip Poker
Price: £19.95
Supplier: Artworx c/o Anco Software, 4 West Gate House, Spital Street, Dartford, Kent
Tel: 0322 92513

STRIPPED OF SKILL

STRIP Poker has been around a little while and has now been converted to run on the ST. Apart from the sharper graphics and use of the mouse, it looks and plays very much the same as the earlier Atari 8 bit version.

This is a one-player game, you versus the computer. The top two-thirds of the display are taken up with a picture of one of two scantily-attired opponents, Melissa and Susy. At the bottom of the screen is a command and comment line, below which is your hand of five cards.

You and your opponent start with $100. Betting is in $5 increments up to a maximum of $25. Once the first round of betting is over both players can elect to exchange any of the cards in their hand in the second round.

Using the mouse, an appropriate command – stay, drop, bet, raise or call – is selected from the command line. Cards to be exchanged at the end of the first round are simply pointed at and clicked with the mouse.

You are allowed a maximum of two bets in each of the two rounds. The normal rules of poker apply. Once betting is complete, your opponent's hand is shown to you. Once either party has run out of money they must borrow another $100 against an item of clothing.

You can please yourself whether or not you start stripping off in front of your computer but in the case of Melissa or Suzy, the picture changes to show them in a new state of undress. Once all clothes have been lost the game is over.

Leaving aside the questionable morals of strip poker, the game does provide some enjoyable hands of poker even though the opponents are rather too easy to beat. If anything, Melissa plays slightly better than Suzy.

The only sound effect is the riffle of cards as they are dealt. As for the graphics, more effort has been lavished on the ladies than the cards, which are rather too simply depicted given the ST's capability.

Future data discs are promised. These are supposed to include tougher opponents, male as well as female.

Strip Poker is fun to play but would have been better if the opponents were as skilled at playing as they were at disrobing.

Sound	5
Graphics	7
Playability	8
Value for money	7
Overall	7

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The 520ST-M keyboard costs only £346.86 (+VAT=£399) and includes an RF modulator and cable, allowing you to connect it to an ordinary domestic TV set. The keyboard is supplied with 512K RAM, a mouse and a free set of 3½" disks containing applications software. For a limited period from August 11th 1986, we have some special packs offering combinations of the 520ST-M keyboard with a ½ Mbyte SF354 Atari disk drive and an Atari monitor (either the Mono SM124, or Colour CM8512). These packages offer up to £200 extra discount on a system, if purchased from Silica, they also come with our free 'ST STARTER KIT'. All of the pack prices shown in the chart include VAT.

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UPGRADE TO 1024K RAM

We are pleased to be able to offer a 1Mbyte upgrade on the standard 520ST keyboard to increase the memory from 512K to a massive 1024K. It has a full 1 year warranty and is available from Silica at an additional retail price of only £86.86 (+VAT=£100). Any of the five packs can be upgraded to 1Mbyte for only £100. The 1Mbyte ST offers a low price alternative to the 1040, but also gives you the benefit of an RF modulator (not normally fitted on the 1040).

REDUCED PRICES

Atari's ST personal computers are now firmly established both in the USA and Europe. The main attraction of the ST range is the value for money which these computers represent, giving both private and business users a powerful asset at a very modest price. There are now several ST packages available from Silica at a reduced price, further enhancing the Atari 'Value for Money' reputation. In addition, we are giving away a FREE Silica 'ST STARTER KIT' with every 520 or 1040 ST purchased at Silica Shop. These offers will only be available for a limited period and commence on 11/8/86.

POWER FOR BUSINESS

The list below shows some of the new business products which have been recently launched for the Atari ST range. It gives an indication of the ST's potential to business buyers looking to install a powerful, low-cost system.

CP/M EMULATOR
20Mbyte HARD DISK
LOTUS 123™ CLONE
dBASE III CLONE
IBM COMPATIBILITY
VT100 EMULATOR
MICROSOFT WRITE
dBASE II

Any ST computer will provide its user with a very powerful asset, utilising a vast range of applications, particularly in the business world. Many software companies have been quick to recognise it for its business potential, and have produced programs for the ST which harness this potential. In addition, there are several peripheral and hardware products becoming available to add to the ST's 'Power For Business'. Software now available includes dBMan, a dBASE III clone as well as H&D Base, a dBASE II clone. In fact, First Software have now launched Ashton Tate's original dBASE II program for the ST. In addition, PC Intercomm is a VT100 emulator which enables you to use any ST keyboard as a terminal connected to a mainframe or mini. Other programs include a powerful accounts package by Cashlink and a Lotus 1-2-3™ clone called VIP Professional. Microsoft have announced that their powerful word processor 'Microsoft Write' will soon be available for the ST. Many packages are available for very specific market applications including a powerful CAD (Computer Aided Design) program called Easy Draw from Migraph. In addition, there is an engineering tool called PC Board Designer by Abacus Software which will enable the user to design printed circuit boards. For further details of how the ST can help in your business, return the coupon below. We will be pleased to send you our latest newsletter and price list.

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FREE SOFTWARE

When you buy a 520 or 1040 ST computer keyboard from Silica Shop, you will receive a large and varied software package free of charge. This package consists of twelve programs. Wherever you purchase your Atari ST computer, you should receive the first six software titles as standard. However, if you purchase your ST from Silica, you will also receive a further six extra titles, giving you a total of twelve. All ST's now have TOS/GEM already installed on ROM, so the list of free software you should receive is as follows:

1) GEM - *DR Desktop environment with WIMP (fitted in ROM)*
2) TOS - *Trimmer Operating System (fitted in ROM)*
3) 1st WORD - *Word Processor (v GST) using GEM*
4) BASIC - *Personal Basic by DR (with manual)*
5) LOGO - *Logo language by DR (with manual)*
6) NEOCHROME - *A powerful colour paint and graphics package (only usable with colour systems)*

If you purchase your ST from Silica, not only will you receive the standard six pieces of software as listed above, but we will also give you the following six additional programs FREE OF CHARGE:

7) MEGAROIDS - *Asteroids type game by Megamax*
8) DOODLE - *Simple paint/doodle drawing package (works on mono or colour systems)*
9) CP/M EMULATOR - *Allows use of DR's Z80 CP/M software to run on the ST range*
10) CP/M UTILITIES - *Various utilities to use with CP/M*
11) DEMONSTRATION & PUBLIC DOMAIN SOFTWARE - *Various games, demos and accessories*
12) CARDS - *A unique set of card games from Microdeal*

These additional free software titles are all part of the FREE Silica 'ST STARTER KIT'; return the coupon below for further details.

FOUR FREE MANUALS

In addition to the free software which will be given to you when you buy your ST from Silica, you will receive four free manuals:

1) **ST OWNERS MANUAL (80 pages):** *Easy access to the information you require to unpack, set-up and become familiar with the ST.*
2) **ST BASIC SOURCE BOOK & TUTORIAL (240 pages):** *Gives you the information to increase your level of programming expertise.*
3) **ATARI LOGO SOURCE BOOK (?? pages):** *A source book for Logo, showing how to use the language on the GEM environment.*
4) **1st WORD MANUAL (48 pages):** *Instructions for 1st Word.*

ST NEWSLETTER

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1040ST-F

For the businessman and the more serious home user, there is the 1040ST-F with 1024K RAM. This can be used in a business environment as a stand-alone system, or can support a mainframe computer as a terminal. The 1040ST-F keyboard, with integral 1Mb disk drive costs only £699 (+VAT=£803.85). As the 1040ST-F was manufactured solely with business use in mind, it does not come with an RF modulator for use with a domestic TV. Instead, it requires a monitor. There are three Atari monitors available, and the prices for the 1040 with these monitors are as follows:

1040 Keyboard Without Monitor - **£699** (+VAT= £803.85)
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The 1040ST-F includes 1Mbyte of RAM as well as a 1Mbyte double sided disk drive and mains transformer, both built into the keyboard to give a compact and stylish unit, with only one mains lead. The 1040ST-F is supplied with a set of software disks as well as our own FREE Silica 'ST STARTER PACK'. Call into your nearest branch of Silica Shop for a demonstration.

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Do you already own a computer
If so, which one do you own? .....

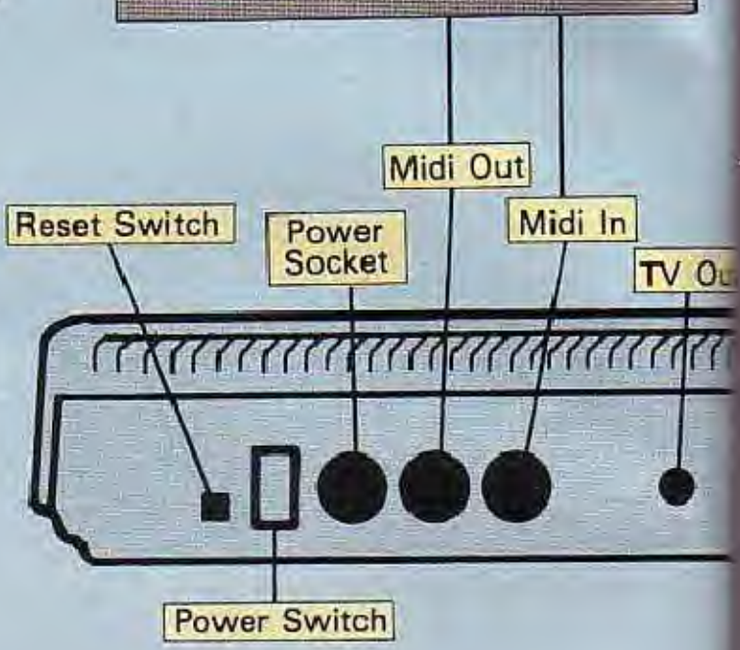
HAVING more connections and peripheral ports than any other home or business computer, the Atari ST has been designed with connection to the outside world in mind. ANDREW BENNETT takes a detailed look at how it works.

The MIDI in and MIDI out ports allow you to connect your ST to standard music industry devices which range from synthesisers to drum boxes. There are several programs available which allow control of MIDI instruments through these ports, including Soundwave SW1 from Shanner International and Music Studio from Activision.

The monitor socket on the back of your ST carries the video signal. Atari makes two monitors – the SM124 black and white and the SC1224 colour monitor. On a colour monitor you can display only the ST's low (320 by 200 points in 16 colours) and medium (640 by 200 points in 4 colours) resolutions while on a black and white monitor you are restricted to high resolution mode (640 by 400 points in black and white).

Hopefully in the near future, we will see several multi-purpose monitors on the market which will be able to display all three resolutions for less than the price of buying both Atari monitors separately – which you're forced to at present.

The 520STM model has an output which none of its fellow STs share – a connection which allows the 520STM to display its colour modes on an ordinary television. While it is possible to display both low and medium resolutions on a television, medium resolution is unreadable on most televisions.



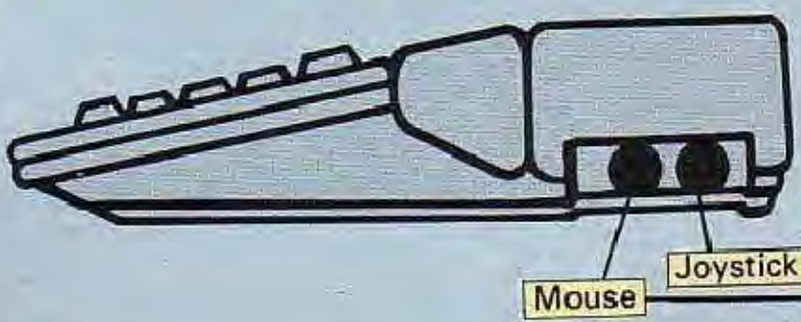
ST peripherals

The serial port, which conforms to the RS232 industry standard, outputs data down a single line and is therefore slower than the ST's parallel port which outputs data down eight lines at once. It allows connection of either serial printers or a modem. Printers which connect to the serial port are usually daisywheels or converted typewriters.

A daisywheel printer uses small petal-like wheels which hold a letter at the end of each stem. When a letter needs to be printed, a hammer presses the letter against the ribbon and thereby prints on the paper.

A modem fitted to this port allows you to connect your ST to the outside world through such services as MicroLink, Telecom Gold and dozens of smaller home based bulletin boards.

Once connected to these services, you can converse and swap messages with your fellow ST owners and also download public domain programs and utilities.



The two joystick ports at the side of the 520STs and at the front of the other models allow you to plug a standard Atari joystick into your ST to control games and some graphic utilities.

Joystick port zero is also set up to accept the ST's mouse which is used to control Gem, with its drop-down menus and windows.

AST is currently designing a graphics tablet for use with the ST, which will allow control of painting and drawing programs with a stylus rather than the mouse or keyboard.

By choosing the Centronics standard for the ST's parallel printer port, Atari has made sure that it is possible to plug in a wide variety of readily available printers from manufacturers such as Epson, Jukt, Star and many others. Atari also manufactures the SMM804 printer which connects with the parallel printer port – reviewed in this issue.

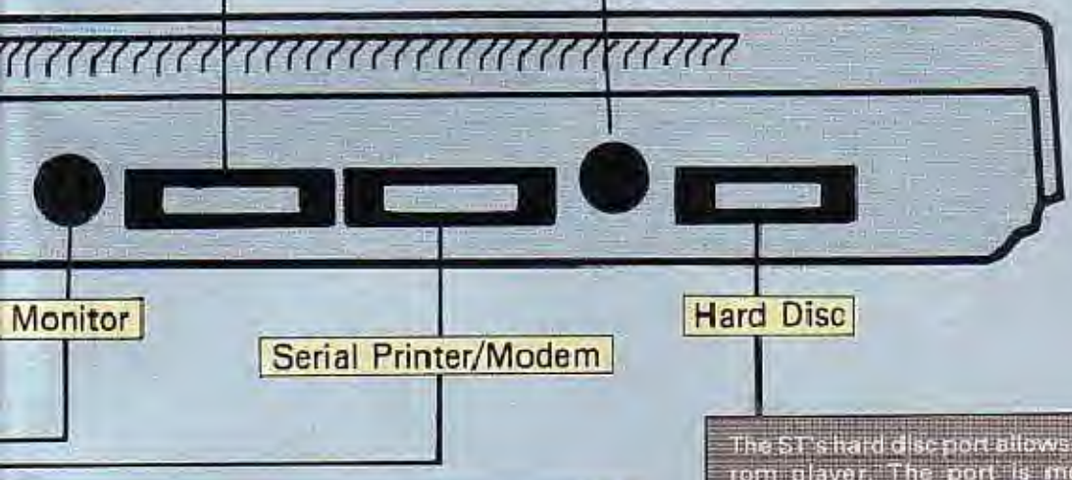
Unlike most older home computers, the ST has a built-in floppy disc controller, which means that either 3.5" or 5.25in floppy disc drives can simply be plugged in and used. Atari manufactures two 3.5in drives — the single sided 360k SF354 and the double sided 720k SF314.

Third party drives come from Cumana and Applied Systems and Techniques (AST), both of whom make double sided drives – see the Cumana review in this issue.

One bonus with 5.25in drives is that you will be able to read and write data created on an IBM PC or compatible. This means that you can continue work started on the IBM PC at the office on your ST at home, as long as the programs you are using save their data in compatible formats. For example VIP Professional from Silica Shop can read and write data created on an IBM by Lotus 1-2-3.

Parallel Printer

Floppy Disc



Monitor

Serial Printer/Modem

Hard Disc

The cartridge port offers the programmer an alternate method of inputting his programs into the ST. Up to 128k of rom (read only memory) can simply be plugged in by boffin and novice alike. This rom can contain any manner of program or data.

The cartridge appears as an icon on the desktop in the same way as the disc icons. When you double click on the cartridge's icon a window is opened and the program or programs stored on the cartridge are displayed as normal. Another double click runs a program from cartridge with none of the delay associated with loading programs from disc.

Unfortunately, the number of cartridge based programs available for the ST is currently limited and is likely to remain so, because of the large cost associated with developing and manufacturing them compared with their disc based counterparts. Programs currently available on cartridge include the excellent Fast Basic and Back-Pack from Computer Concepts, both of which were reviewed in the November issue of *Atari ST User*.

Another use for the cartridge port is to connect the ST to certain hardware devices, such as battery backed clocks and hardware development systems. The Nexus Eprom developer board which was reviewed last month is an example of this.

The ST's hard disc port allows you to connect a hard disc drive or CD rom player. The port is modelled upon, but is unfortunately incompatible with the very popular Small Computer Systems Interface (SCSI – pronounced scuzzy) standard port.

The magnetic disc inside a hard drive is permanently sealed and cannot be removed like ordinary floppy discs. This means that the disc can spin much faster and the data stored upon it can be packed much tighter, because there is no chance of dust interfering.

Hard disc drives are available from various manufacturers ranging in capacity from 10Mb to 60Mb and in price from £650 to £2500.

CD rom players are based on the Hi-Fi compact discs that are available from most high street electrical shops, but instead of musical information computer data and programs are stored on the surface of the disc. The disc is read very accurately at very high speeds by a small laser whose beam tracks across the disc like a stylus across a record. As with a musical compact disc, a CD rom cannot be changed by the user but must be created in the duplication factory.

A single compact disc can hold several dozen megabytes of computer data – entire encyclopedias can be stored on only a small portion of a disc. CD rom players currently start at £1200, but Atari hopes to produce one in late 1987 for around £600.

ROM Cartridge

FAST

FAST BASIC

Atari ST cartridge

A new and very fast BASIC interpreter ROM cartridge for the Atari ST computers. This 128K program has been written specifically for the Atari ST computers and so makes full use of (and gives the programmer full access to) all the special features of this machine.

Based around BBC BASIC, but considerably extended, FAST BASIC is a modern structured programming language. It is the ideal environment for those who want to experiment with the ST and to find out about GEM and 68000 assembly etc.

SPEED
With an average PCW benchmark speed of 1.8 seconds, this is the fastest BASIC available (faster than any other PCW have tested) and is faster than BASIC running on the new Compaq 80386 super micro. See table for other comparisons.

EDITOR
A full GEM based scrolling editor is included. Supports search and replace, cut, copy, paste and very fast scrolling speeds. Multiple programs may be held in memory at once, and each program can have its own editing window and associated icon. A special immediate window allows commands to be used immediately without forming part of the BASIC program.

PROGRAM SIZE

There is no limit to program size, other than available memory, and there is no speed degradation for running large programs as there is on many other interpreters. Strings may be up to 64K long, arrays may be over 64K.

ASSEMBLER
Similar in concept to BBC BASIC, this allows mixing of assembly language and BASIC together. The assembler can assemble at over 50,000 lines per minute making it the fastest available. Macro and conditional assembly facilities combined with one of the best editors around makes this a superior alternative to many dedicated assemblers.

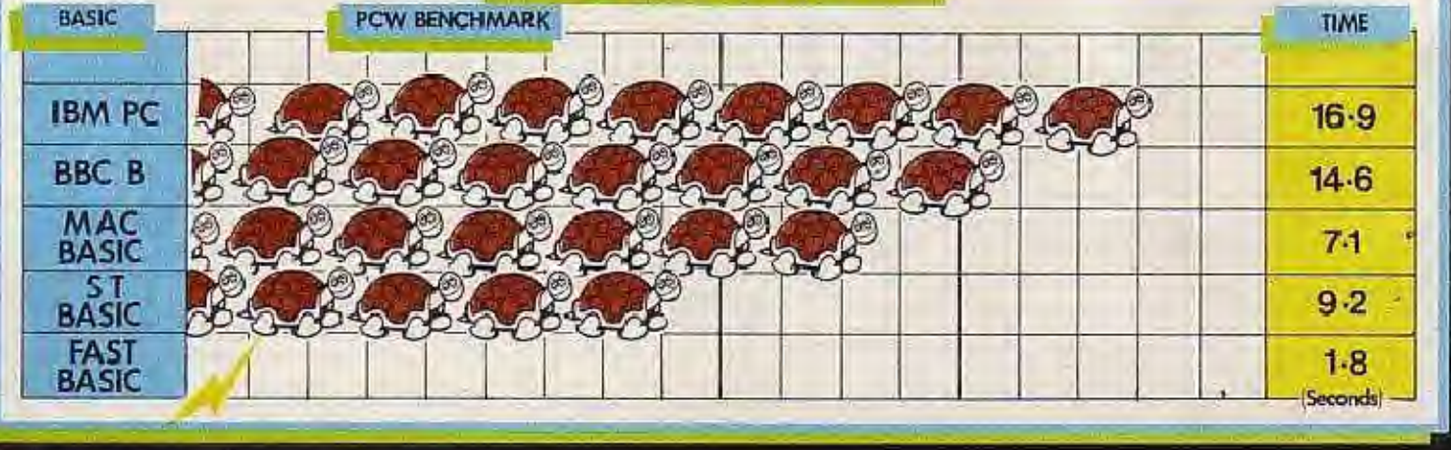
VARIABLES
FAST BASIC supports a full range of variables, 8, 16 and 32 bit integers for speed. Single and double precision floating point. Strings up to 64K and arrays of any size. The floating point maths routines are

Price £89.90 inc. VAT and postage. Available from all good Atari dealers or directly from Computer Concepts.

FAST BASIC INCLUDES:

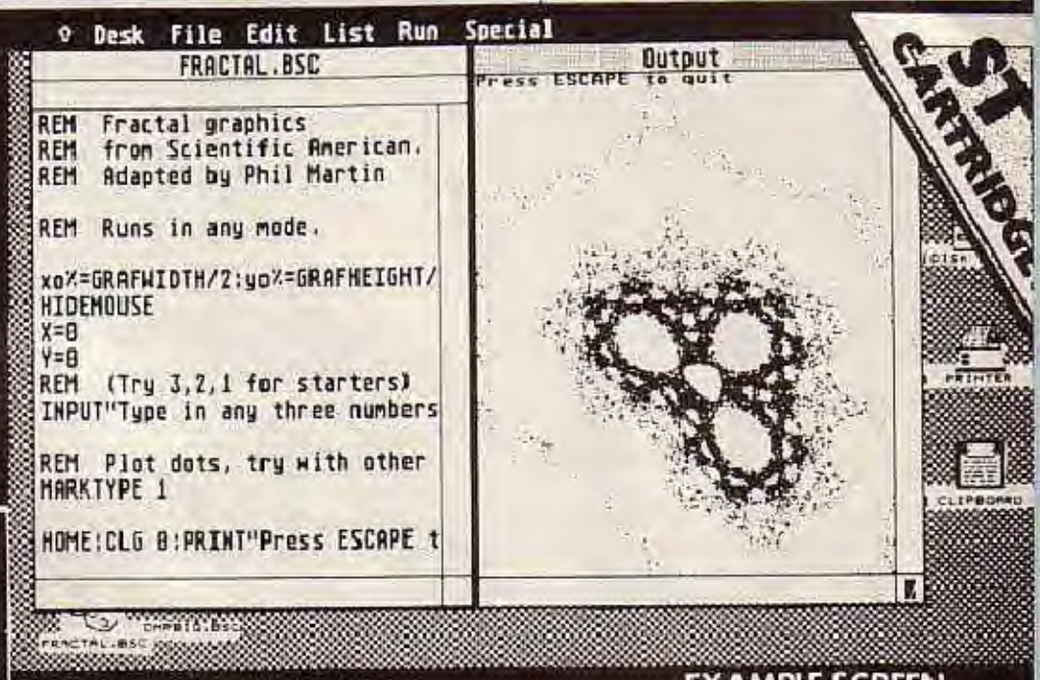
- **ROM Cartridge** - it uses no RAM, leaving the maximum available for BASIC programs. It does not have to be loaded from disc and so offers instant start-up and can be permanently available.
- **Example disc** containing a range of example programs from simple loops to complete GEM examples.
- **Manual.** Comprehensive 400 page spiral bound manual detailing all commands.
- **Quick reference card**

COMPARISONS



BASIC

STRUCTURED
Programs are normally written without line numbers. This, in addition to named procedures and functions, ensures that FAST BASIC programs are easier to write and simpler to understand than any other programming language. It also supports REPEAT..UNTIL, WHILE..WEND and multi line IF..THEN..ELSE constructs, and in addition a powerful SWITCH...CASE... ENDSWITCH structure eliminates the use of multiple IF..THEN statements. FAST BASIC supports many of the best features of languages like PASCAL or C, but without the drawbacks.



EXAMPLE SCREEN

GEM
Direct and full access is given to the ST graphics such as circle, arc, pie, area filling etc. In addition there is a range of keywords for controlling the menus, icons and windows. It is possible to write programs that present the user with a perfectly standard GEM type interface. An example of a complete GEM program is supplied on the example disc.

MONEY BACK GUARANTEE

If for any reason you are unsatisfied with FAST BASIC we offer a full, no quibble, money back guarantee.

Review

"...it positively flies."
"Students of structured programming will be well pleased.."
"Perhaps the most staggering advantage of Fast BASIC over the official lingo concerns using the various facilities offered by GEM."
"...it's a vast improvement on Atari BASIC."

Popular Computing Weekly

Review

"The Fast BASIC package provides a complete system for the home programmer; the language is beautifully structured."
"The cartridge spans the gap between high level and low level programming languages and combines some excellent high level structures...It seems to have the advantages of languages like C and Pascal, without the restrictions."
"Bear in mind the fact that the cheapest assembler for the ST costs £39.95, this can only leave you to conclude that Fast BASIC really is phenomenal value for money."
"If you need a good programming language for home, business, or educational use, buy FAST BASIC. If you would like to program GEM applications but do not feel competent enough to tackle C, buy FAST BASIC. If you need a macro assembler with a good editor and enviroment, buy FAST BASIC."

ST User magazine - Oct 86

STAND ALONE DISC
Now available this disc enables FAST BASIC programs to run without the cartridge being present. Once a BASIC program has been written with the cartridge fitted, it can be converted, using this disc, to a stand alone GEM application program. Simply double click on its icon and it will execute the BASIC program as if it were a normal GEM program. This enables BASIC programs to be run while the cartridge slot is used for other things. Also programs can be written in FAST BASIC and given, or marketted, to others who do not have the cartridge. We ask no licence fee or royalties.

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Review

"...just about every command you could ever ask for is supplied, plus a good many others beside."
"-the execution speed has to be seen to be believed."
"...if you own an ST - even if you are a C or machine code programmer - you should own a copy of FAST ST BASIC."
"I don't know of a BASIC on any other machine which is so feature packed and yet still easy to use."

Atari User -Nov 86

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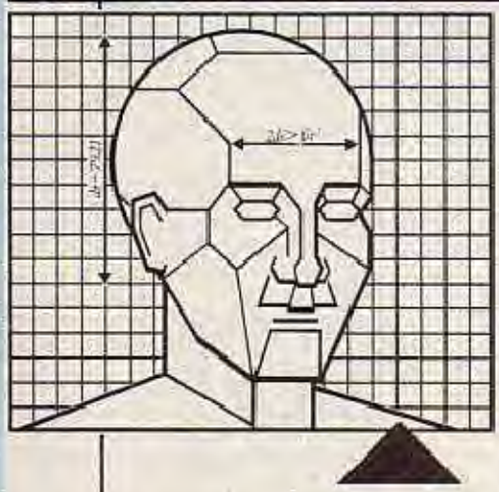

Cambridge LISP is unique and perhaps the most powerful language yet to become available for the ST. It combines an interpreter and compiler providing a complete environment for learning and using LISP, the language of Artificial Intelligence.

The interpreter makes it easy for you to learn LISP and to test and debug your programs as you go along. Once debugged, the compiler makes your programs run efficiently and quickly.

CAMBRIDGE LISP FEATURES

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Cambridge LISP has the computing power of very much larger and expensive systems. It comes complete with a full interface to GEM functions, example programs and a comprehensive, step-by step manual, all for **£149.95**

THE C COMPILER THE PROFESSIONALS USE

IBM COMPATIBLE C COMPILER FOR THE ST

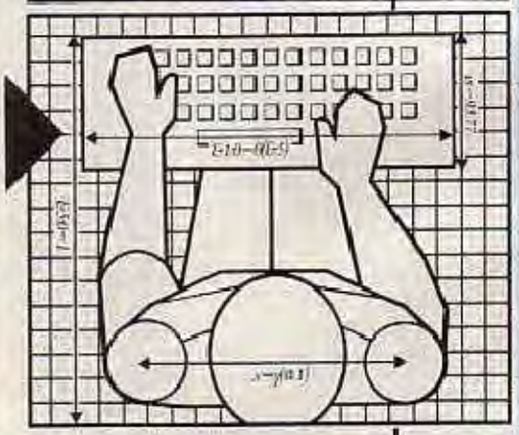
LATTICE C

Because GEM and TOS routines are written in C, using the C language is important to programmers who wish to use all the features and power of the ST. Lattice C is compatible with Lattice C compilers on the IBM-PC and other micros, this means structured, powerful and portable programming.

Lattice C is a full Kernighan and Ritchie implementation with floating point arithmetic, macros, powerful data types, separate compilation and a number of optimizations to produce fast and compact code.

Lattice C includes a complete interface to GEM VDI and AES functions and comes with comprehensive libraries of UNIX and utility functions. All the features of the ST – icons, windows, graphics etc. can be used. Modules written in assembler or other high level languages can be linked into Lattice C programs.

Lattice C includes Menu +, screen editor and a comprehensive user manual, all for **£99.95.**



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Atari ST User July 1986.

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Everything you wanted to know about discs . . .

. . . but were afraid to ask

By Andrew Bennett

IN these days of disc-driven computers such as the ST, it is surprising how many people cannot explain what happens inside the box which lives next to or inside of their computers. Yet it's not too hard to discover what's going on: Here we will try to explain some of the hidden secrets of your ST discs and their drives.

It is probably easiest to compare your disc and its drive to an LP and its player. The player, or drive, is made up of several mechanical parts including a motor to spin the disc at very high speeds inside its protective plastic case.

When you insert a disc into the drive, a simple mechanism opens the sliding door on the disc and reveals the magnetic portion inside. The stylus or head sits on top of this exposed area, reading and writing to the disc by changing the magnetic state of the particles that make up its surface.

For this reason, you must never place your discs close to a magnet (including the top or side of your TV or monitor which contains powerful magnets) – this can change the magnetism of the particles thus destroying valuable data on the disc.

The information on the disc is mapped out into tracks. The head can read or write to one track of the disc at a time in much the same way as a stylus sits in the groove of a record. The head is moved from track to track by the precise movement of the tracking motor.

On an ST disc there are some 80 tracks numbered from zero at the outside to 79 in the centre. Each is further divided into nine sectors numbered from one to nine, each of which can hold 512 bytes of data. Multiplied together, this makes a total of some 368640 bytes or 360k of data on each single sided disc.

When you format a disc from the desktop – which places the tracks and sectors on the disc ready for the ST to use – you will notice that you have only 357376 bytes of data on the disc. What happens to the extra 11264 bytes?

When you save a file on a disc, it can spread across dozens of sectors. The ST needs to remember where the file starts, how long it is, what you have called it and other such information.

Your ST could remember each disc in its memory, but this would be extremely wasteful of memory, so instead some of the 360k of disc space is taken to remember the necessary information about your files.

Some of this information is stored in the directory of the disc, which occupies 7 sectors on the disc, and the rest is stored in the File Allocation Table (FAT) which takes up another 10 sectors.

One more sector – the Boot sector – is read by the ST when you switch it on or press reset. This contains information about the disc and which program, if any, to autorun.

This still leaves a discrepancy of four sectors, which can be explained by introducing the idea of clusters. A cluster is made up of two disc sectors and is the smallest unit which the ST drives can think in. Therefore even a file which contains nothing but your name will take up 2 sectors, or 1k of the disc.

And of course there are 360 clusters to a disc. This also means that you can be left with a disc which is apparently full but has dozens of single unused sectors.

Therefore the above figures changes to 8 sectors for the directory, 12 for the FAT (which is in fact 5 sectors long and is stored twice on each disc for safety) and 2 for the boot information. This makes a total of 22 sectors or 11264 bytes.

The seven sectors of the disc directory contains 8 entries about each file on the disc. Each of the entries is 32 bytes long and is made up of the

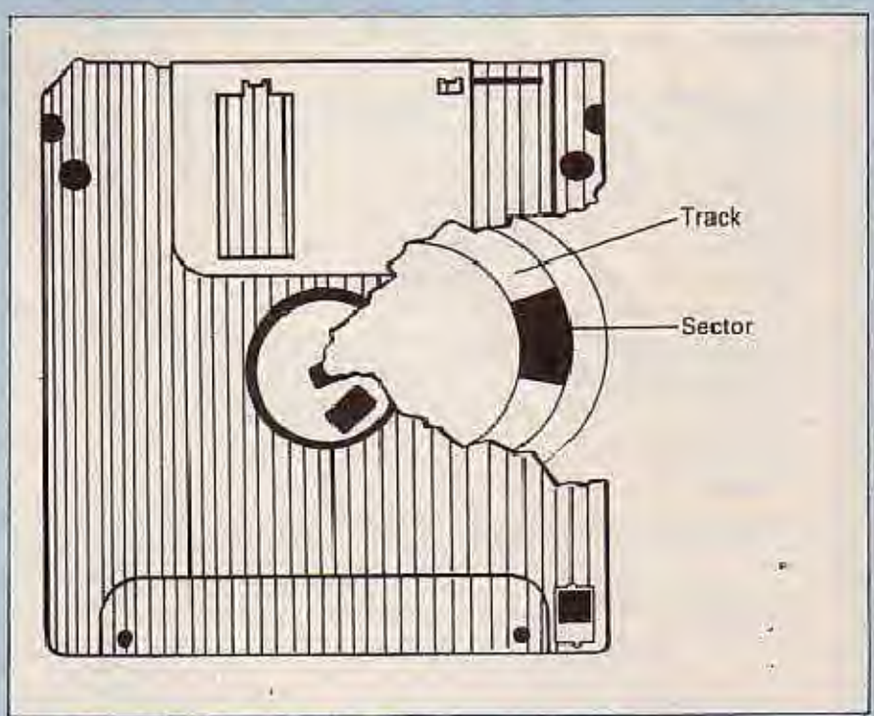

Figure I: 10 sector single density format

Name	Size (Bytes)
Filename	8
Extension	3
Attributes	1
Reserved	1
Time of last change	2
Date of last change	2
Where file begins	2
File size	4

Figure II: Directory entry

Range	Meaning
0	Unused and available
2 to 4080	Part of a file
4081 to 4087	Unusable – Damaged
4088 to 4095	End of a file

Figure III: Possible FAT entry values

information in Figure II.

The third entry, the files' attributes, consists of 8 bits of information such as whether the file is read only. Most of the attributes, for example whether the file is hidden – not shown in a directory of the disc – are not used on the ST.

The FAT keeps track of which sectors belong to which files, since a file isn't one continuous area of sectors but is stored on whichever sectors are available on the disc.

It is made up of entries for each of the clusters on the disc. Each of the FAT entries is 1.5 bytes or 12 bits long and can hold a number between 0 and 4095. The possible values that can be found in a FAT entry are shown in Figure III.

If a FAT entry has a value between 2 and 4080 it points to the next cluster which contains the file. That cluster's FAT entry contains a pointer to the next cluster and so on until we reach a FAT entry of between 4088 and 4095, which is the last cluster of the file.

If some of the information on one of the sectors of one of your discs become damaged or corrupted, you can usually repair it using the information above and one of the disc doctor programs that are available for the ST. These include Hippo Disk Utilities, Disk Help from Microdeal and the one which is proving most popular with the ST community – Disk Doctor from Antic.

Remember to make attempted repairs on a back-up of your damaged disc – not the original – so that you can try again if something goes wrong. ■

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Quiet as a whisper

It is inevitable that any successful computer will inspire the industry to produce add-ons of all shapes and sizes. Until recently, there was only one supplier of ST disc drives – Atari itself.

Now there are two more on the scene in the shape of Applied Systems and Techniques (AST) and Cumana, who are well known for their BBC Micro drives. The AST drives were reviewed in the August issue of *Atari ST User*, so here we take a close look at Cumana's offerings, both 3.5 and 5.25in drives.

The 3.5in drives are double sided models which can store 720k on a single disc and come as either single or double drive units.

Finished in a shade of grey similar to that of the Atari drives, the Cumana variety are not as wide or as high but they are almost the same length. But unlike the Atari drives they have a built-in power supply which eliminates the need for a brick sized transformer under your desk.

Another difference is that instead of Atari's round cable, the Cumana drives are supplied with a ribbon cable and a special adapter plugging it into the back of the ST or an Atari drive.

The single Cumana drive can only be used as drive B in connection with an Atari drive, since it has no socket into which to plug another Atari drive. Therefore if you already own an Atari drive, it will remain as drive A and the Cumana drive becomes drive B.

If you have a 1040, 2080 or 4160 with their built-in drives, the Cumana drive is used as drive B. Since the ST can only be connected to two floppy disc drives at once, Cumana's dual disc units can only be attached to the 520ST.

In operation the Cumana drives are whisper quiet, sounding more like a hard disc than the Atari floppy drives. Unfortunately – due to a quirk in the design of the ST which is in no way Cumana's fault – both motors operate when you access a drive.

This means that if you have an Atari drive as A and a Cumana unit as drive B, the noise that the Atari drive makes will drown out the quietness of the Cumana unit. The same happens when you have two Atari drives or two Cumana drives connected, but you can't tell because both drives sound the same.

Cumana also manufacture 5.25in drives for the ST. These are double sided and can hold up to 720k on a standard floppy disc of the kind found on the 8 bit Ataris and the IBM PC. While they cost slightly more than their 3.5in counterparts the actual discs themselves are about half the price.

As with the 3.5in drives, you can attach one or two of them to your ST and they can be freely mixed – Cumana even makes one unit, the CCA2000S, which has both a 5.25 and a 3.5in drive.

Of course you can't read standard 3.5in drives on a 5.25in drive and you don't get any more storage. So why attach one to the ST?

When Atari designed the ST, it wisely opted for the MSdos disc format standard. This means that with a 5.25in drive attached to your ST, you can read and write files which will be compatible with the IBM PCs.

The result is that you can work with an IBM at the office and at home on your ST – as long as the programs which you are using can understand each other's files. For example, VIP Professional from Silica Shop can read and write files which are compatible with Lotus 1-2-3 on the IBM. And you can save IBM word processor files in Ascii for loading into 1st Word or most other ST word processors.

To conclude, I found Cumana's disc drives to be of the highest quality and fully compatible with the ST. In price, size and quietness they out perform their Atari counterparts easily – give them serious consideration when you're thinking about upgrading! ■

Cumana offers 3.5in and 5.25in systems – or even a combination of the two

By Andrew Bennett

The truth about TELEX

How much does it cost to go on Telex?

You could go the conventional way and buy a dedicated Telex machine. The cheapest will cost you £1,604 (the Whisper), the dearest £2,892 (the Cheetah). You will also need a separate telephone line, costing £101 to install, plus £404 a year rental. That's a total outlay over the first year of a minimum of £2,109. (All prices include VAT.)

Or you could do what more and more micro users are doing – use your Atari to double as a Telex machine. And just use your ordinary telephone!

How do I turn my Atari into a Telex machine?

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MicroLink application form: Page 8

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If you've written any useful or interesting five line programs in either Atari Basic, Fast Basic or Logo, why not send them in to our five-liners section for ST owners?

We pay £25 for each one published.

Simply send a copy on disc along with a clear listing and good explanatory notes to:

ST Five-liners, Atari User, Europa House, 68 Chester Road, Hazel Grove, Stockport SK7 5NY.

TEXT TYPES

from S. CHERIAN

THIS allows you to change the height, font, style and colour of any text displayed by your Atari Basic programs.

Line Breakdown

10 Fulls and clears the output window and inputs the various values.
20 Sets the character height.
30 Sets the style of the character.
40 Sets the font.
50 Inputs the text and prints it to the screen.

```
10  fullw 2:clearw 2:input "charheight,font,colour,effect,posx,posy",a,b,c,d,x,y
20  poke contrl,12:poke contrl+2,1:poke contrl+6,0:poke ptsin,0:poke ptsin+2,a   :vdisys(0)
30  poke contrl,106: poke contrl+2,0: poke contrl+6,1:poke intin,d:vdisys(0)
40  poke contrl,21:poke contrl+2,0:poke contrl+6,1:poke intin,b:vdisys(0)
50  input "text ",a$:  color c: gotoxy x,y: ?a$: goto 10
```

TEXT SCROLLER

from ADAM KENNEDY

HERE'S a quick and easy way of smooth scrolling text across the screen in Atari Basic, using Gem call 8. The text to be scrolled is placed in *a$*.

Line Breakdown

10 Set up the variables.
20 Put the Ascii values of the letters into the *intin* array.
30 Poke in the position of the text.
40 Do the call and change the colour of the text accordingly. If the text has reached the right hand edge of the screen, wrap it round to the other side.
50 Jump back to line 30.

```
10  done=0:x=0:y=200:poke contrl,8:poke contrl+2,1:a$="string to scroll"
20  poke intin,32:for i=1 to len(a$):poke intin+2*i,asc(mid$(a$,i,1)):next i
                                                    :poke contrl+6,len(a$)+1
30  poke ptsin,x:poke ptsin+2,y
40  color i,i,i,i,i:vdisys(0):x=x+4:if x>640 then x=4
50  goto 30
```

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Just answer the five straightforward questions, cut out or photocopy the entry form and send it to the address below. Your entry must arrive by January 31, 1987.

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1. What was the name of the first Space Shuttle?
2. What was the name of the first dog in space?
3. What does NASA stand for?
4. What was the name of the first artificial satellite?
5. Name the three Apollo crewmen who lost their lives on the launch pad?

Answers

1 _____

2 _____

3 _____

4 _____

5 _____

Name _____

Address _____

_____

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Send to:
Shuttle Competition, Atari User, Europa House, 68 Chester Road, Hazel Grove, Stockport SK7 5NY.

Joystick control

WE start this month with a query from Barry Barwick from Derwent regarding reading joystick values from Atari Basic.

I'm afraid that due to some peculiarities in the keyboard controller chip which also controls the joystick ports on the ST, joystick control is not possible from Atari or even Fast Basic and is difficult even in C.

I suggest that you consider using the mouse for non-keyboard program control, which is simple in Fast Basic and relatively easy in Atari Basic. See Program I for the method of using the mouse from Atari Basic.

★ ★ ★

John Packard from Swansea writes to ask me how to use the Gem file selector from his C programs. Although the file selector is one the most commonly used routines in ST programs, it is not mentioned in a number of books about Gem routines and is even omitted from some C manuals.

Looking at the accompanying screen dump you will see that the file selector is made up from four parts – the name of the current directory and file,

```
10  REM PRINT MOUSE POSITION AND BUTTON STATUS
20  A#=GB
30  CONTROL=PEEK(A#)
40  GLOBAL=PEEK(A#+4)
50  GINTIN=PEEK(A#+8)
60  GINTOUT=PEEK(A#+12)
70  ADDRIN=PEEK(A#+16)
80  ADDROUT=PEEK(A#+20)
90  GEMSYS(79)
100 PRINT PEEK(GINTOUT+2) : REM MOUSE X
110 PRINT PEEK(GINTOUT+4) : REM MOUSE Y
120 PRINT PEEK(GINTOUT+6) : REM MOUSE BUTTON
```

Program I: Using the mouse from Atari Basic

the window containing the listing of the directory and the two buttons which you click on.

When you call the file selector, you must provide the routine with three inputs – directory path, initial selection and the name of a variable to hold the result of the button press.

The routine's call looks like this:

return= fsel_input(path, selection, &button);

The value of the variable *return* can usually be ignored and is simply an error code which is positive if no error occurred.

The path is of type Char and will look something like:

path[]="A:*.DOC/0";

If you change the directory path it will be stored in the variable *path*.

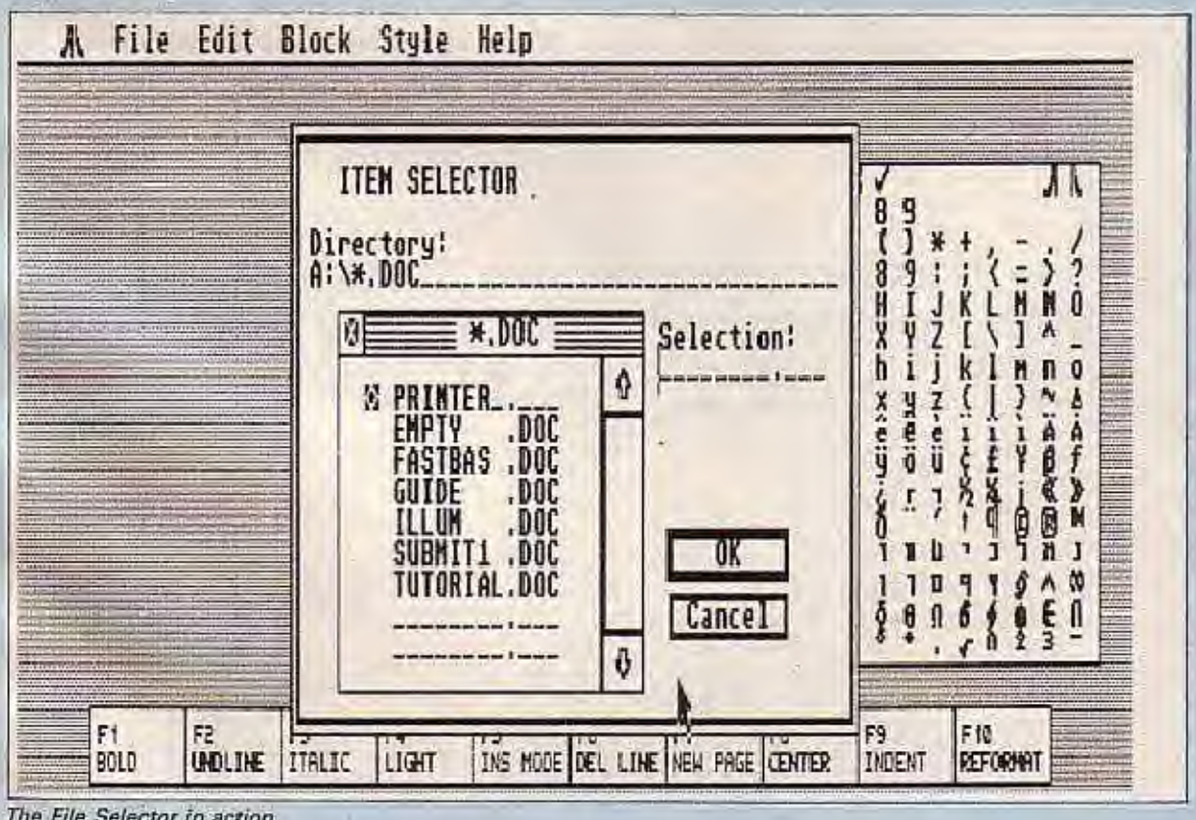
You should set the first byte of selection to zero if you wish the selection to be blank when you call the file selector:

selection[0]=0;

Your final choice will be returned in the string selection.

button will hold either 0 if Cancel was clicked on or 1 if Return was pressed or OK was clicked on.

All other operations of the file selector, including moving through the directory and changing discs, are automatically handled by the



The File Selector in action

Send your Atari ST queries to: Andrew Bennett, Atari ST User, Europa House, 68 Chester Road, Hazel Grove, Stockport SK7 5NY.

Q A

fsel_input routine.

It is then up to your program to decide if the file exists, read it in, delete it or whatever else you want to do.

When the file selector routine ends, a large grey area will be left on the screen which your program will have to clean up by redrawing whatever was there before the file selector was called.

★ ★ ★

Harry Rawcliffe writes to ask about the excessive cost of hard discs for the ST and whether there are any viable alternatives.

Whereas hard disc units for the IBM PC and its compatibles seem to start at around £400 for 10Mb and £550 for 20Mb, the best price for an ST hard drive is around £750 for a 20Mb unit.

If you can't afford this sort of price, your only alternative is to wait for the price to drop, which should begin to happen in the new year.

If you don't necessarily require the speed of a hard disc but need the capacity, you might have another choice in the near future.

At least one British company is working to produce a new 3.5in unit for the ST which could store up to 6Mb. It is currently waiting for the Far Eastern drive manufacturers to decide on the format and design of the drives. I'll keep you informed of progress.

★ ★ ★

There is a bug in the file selector routine which can cause you to completely lose whatever you are working on. It rears its ugly head when you click on the directory line of the file selector and change the current directory path.

If you include an underscore (_) character in this line, the ST will crash with 10 bomb symbols appearing on the screen.

To see this for yourself, load 1st Word and click on the directory line when the file selector is showing. Press the underscore character once and see the result.

The crash is unrecoverable – the only solution is to reboot your ST. Now that you know about the problem you'll be able to avoid it and Atari will hopefully fix it in the next upgrade of Gem.

★ ★ ★

A few of you have written in concerning a problem with last month's screen conversion programs which convert a colour screen to one which can be viewed in black and white, high resolution mode.

The problem arises when you attempt to run the programs on an ST which has more than 512k of memory. A completely blank screen will appear when the program is supposed to be displaying the picture as it is converted.

A couple of very simple changes will correct this problem for 1Mb STs.

In Program I, change the &H78000 in lines 20 and 220 to &HF8000. In Program II change the &H78000 in lines 1 and 61 to &HF8000. Both programs will now operate correctly.

We must ask that you always take the various possible locations for the screen into account when you are writing your programs in whatever language. ■

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